



Department of Trade and Industry

# **ELECTROMAGNETIC COMPATIBILITY DIRECTIVE**

**Study of the Effect on Industry of  
complying with the Electromagnetic  
Compatibility Directive**

***Summary of Findings and  
Recommendations***

**By**

**Brian Jones  
EMC Consultant**

**October 1997**

# Contents

- 1. Introduction ..... 2**
  - 1.1. Style ..... 2
  - 1.2. Market survey ..... 2
  - 1.3. Trading Standards ..... 2
  - 1.4. Survey of Small Businesses ..... 3
  - 1.5. Subcontracted work ..... 3
- 2. List of Recommendations ..... 3**
- 3. Findings ..... 6**
  - 3.1. The immunity requirements of the directive ..... 6
  - 3.2. Repeatability of EMC testing in meeting the requirements of the Directive ..... 6
  - 3.3. Is the *Minimising the cost of compliance* advice valid? ..... 8
  - 3.4. Use of apparatus in certain environments ..... 8
  - 3.5. Should all sectors be within the scope? ..... 9
  - 3.6. EMC Standards ..... 10
  - 3.7. Status of the latest guidance from the Commission ..... 11
  - 3.8. One-offs ..... 11
  - 3.9. Infill, extensions and upgrades ..... 12
  - 3.10. Building cabling ..... 12
  - 3.11. CE Marking of products which are not relevant apparatus ..... 13
  - 3.12. Test methods for modules and components performing a direct function ..... 13
  - 3.13. Categories of apparatus ..... 14
  - 3.14. Routes to compliance ..... 14
  - 3.15. General comments ..... 14
- 4. Market survey of providers of consultancy, testing, and advice ..... 15**
  - 4.1. Competent Bodies, Test Houses, and Consultants ..... 15
  - 4.2. The DTI ..... 15
- 5. Enforcement Bodies ..... 16**
  - 5.1. Trading Standards ..... 16
  - 5.2. Health & Safety Executive ..... 17
  - 5.3. The Civil Aviation Authority ..... 17
- 6. Special needs ..... 18**
  - 6.1. Additional help available for Small and Medium Enterprises ..... 18
  - 6.2. Survey of SMEs ..... 19

# 1. Introduction

This report describes the findings from the Department of Trade and Industry (DTI) *Study of the effect on UK industry of complying with the Electromagnetic Compatibility Regulations*. These regulations of 1992 (SI 1992 No. 2372) as amended, are the UK implementation of the Electromagnetic Compatibility Directive 89/336/EEC, and subsequent amendments.

The purpose of the study was to determine whether there were areas of the Directive and UK Regulations which could be improved, the problems that businesses, particularly small and medium enterprises (SMEs), faced when complying with the Directive, and other associated problems.

The study was performed between October 1996 and February 1997.

## 1.1 Style

The survey style was neutral with open questions. Where negative comments were received, positive suggestions for improvement were requested, although not always received.

As far as possible, data was collected by face-to-face meetings with representatives of each industry sector. This process is time-consuming, and it was not possible to do this with all industry sectors. Telephone interviews were therefore carried out, and written information sought.

An attempt was made to avoid self selection by responding organisations, associations and companies, by proactively seeking information. This was achieved in the small business sector, the providers of advice, and the enforcement authorities. It was not always possible in the larger businesses, as some trade associations invited their members to contact me directly. This resulted in only those companies with strong views replying, which may produce a picture more pessimistic than the true situation.

Fifty one trade associations were identified, together with a number of larger suppliers, laboratories, Competent Bodies, Notified Bodies and other interested parties. Not all agreed to take part in the survey, but a good cross-section of UK industry offered their views.

## 1.2 Market survey

EMC directories and adverts in magazines were used to identify suitable organisations to be approached. Distortion of results would occur if the organisations being surveyed were aware of this. It was therefore necessary to adopt the "mystery shopper" method for telephone enquiries to these companies. The phone calls were made by a colleague, whilst I listened on a second telephone with the transmitter disconnected. An attempt was made to contact 45 commercial organisations, identified from directories of EMC service providers in the electronics press, and we managed to speak to 41. We also spoke to three EMC Clubs.

A script was used, and followed as closely as the responses allowed, to maximise objectivity. A fictitious company name was adopted and two products were described. The first was an ESD wrist strap tester, a small, battery-powered device which checks the resistance between the operator and earth and contains a small dc/dc converter. This would be a candidate for the proposals for simple derived tests or some pre-compliance work as outlined in the DTI's *Minimising the cost of meeting the EMC Directive* leaflet. The second product, bespoke control panels of a type used to control laboratory equipment, containing PLCs and motor drives, may need testing or a Technical Construction File (TCF) as the route to compliance.

## 1.3 Trading Standards

The survey of Trading Standards Officers' views was obtained in two stages. Firstly, the Local Authority Co-ordinating Body on Food and Trading Standards (LACOTS) was contacted for an overview. Secondly,

a number of authorities, selected at random, were surveyed for individual experiences and views. Eighteen Trading Standards Departments from all parts of the UK were contacted directly. These were selected at random, but care was taken to include both large and small authorities and a mixture of urban and rural locations.

## **1.4 Survey of Small Businesses**

For the survey of SMEs' views, the Dunn & Bradstreet Trade Directories were used to identify over 180 companies across over 50 trade sectors, as potential manufacturers of products within the scope of the directive. Each of these employed less than 100 people, the majority less than 40. Time did not permit contact to be made with all the companies, and an attempt was made to contact 130, taken at random from the list. Of these, 19 could not be reached because there was no answer or the number was unobtainable. Of those companies contacted, 3 declined to take part in a telephone survey. In a further 46 cases the correct person could not be reached, even after several attempts, and calling back at times specified. Various excuses were given, some sounding more plausible than others. It is possible that some of these companies are not compliant, and did not wish to divulge the fact.

This leaves 62 companies who took part in the survey. Of these, 18 companies did not manufacture, or their products contained no electrical parts.

## **1.5 Subcontracted work**

The National Physical Laboratory (NPL) carried out some of the work for sections 3.2 and 3.4.

# **2. List of Recommendations**

### **The immunity requirements of the Directive**

1. No change should be made to the immunity requirements of the Directive. If products are deemed to be compliant without testing, this should be covered in a product family standard.
2. Exemption of products by other criteria should be clearly stated in Commission Guidelines, together with the rationale, and the means of defining the envelope of the range of products exempted.

### **The repeatability of EMC testing**

3. Further studies on the repeatability of EMC testing are required. The United Kingdom Accreditation Service (UKAS) surveys should be extended to include the effect of cabling, and the additional uncertainties where the Equipment Under Test (EUT) consists of more than one box. Consideration should be given of how the repeatability of immunity testing can be assessed.
4. The CISPR "80/80 Rule" is probably too entrenched for consideration of its removal from the emissions standards, but industry must be made aware of its true purpose. The issue of whether or not to test more than one sample should be addressed more clearly in the Commission Guidelines.

### **DTI advice to SMEs on Minimising the cost of compliance**

5. The "Minimising the cost..." guidance is basically considered to be sound, but should be amended to include greater emphasis on due diligence and the need to keep records. The types of records to be kept should be described in general terms.
6. The resulting document should be promulgated more widely than the first edition.

7. Further guidance for those involved in procurement, and for installers, would be helpful.

### **Use of apparatus in certain environments**

8. Create two new generic standards for emission and immunity in the domestic environment, by splitting these away from the commercial and light industry generic standards.
9. Improve the clarity of the definition of the light industry and industrial environments, and remove references to the nature of the power supply as a differentiator.

### **Should all sectors be in the scope?**

10. The boundaries between the EMC Directive and specific vertical directives, in particular the Medical Devices Directive, should be defined clearly, possibly in an addendum to the Commission Guidelines.
11. There should be no more vertical directives containing EMC within their scope.

### **EMC Standards**

12. It is necessary to have checks at various stages in the standards process, from agreement for new standardisation work, through to production and authorisation, to ensure that the standard is necessary, and meets the protection objectives of the EMC Directive.
13. The Commission should review CENELEC's standardisation mandate to include checks and balances as to whether standards are needed. A process for cost/benefit analysis should be developed.
14. A formal route for identifying standards which are too onerous should be created, to balance the process for identifying shortcomings laid down in the Directive.
15. A way should be found to increase the representation of small manufacturers, and users, on standards committees, particularly at international level.
16. A feedback mechanism should be created to enable some analysis of the number and type of EMC problems to be recorded, and trends observed.
17. International standards working groups should be disbanded once their specific work has been completed. This would prevent such groups looking for other work to prolong their existence.
18. The adoption of parallel voting for international (voluntary) and European Norm (regulatory) standards can cause problems. The standards should define only technical requirements for testing. Statements of an administrative nature should be removed from the European versions.
19. BSI should make Committee Drafts available for information to the public on the same commercial basis as drafts for public comment.
20. A list of standards and amendments published in the *Official Journal of the European Communities*, should be available from an official source, without the need to subscribe to *OJEC*.

### **Status of the latest guidance from the Commission**

21. The EMC Directive should be revised by an amending directive to bring it into line with the Commission's latest thinking, as described in the new Guidelines. The UK Regulations should then be amended to align.
22. The existence and content of the Guidelines should be promulgated widely.
23. The *Think Tank* should be made more representative of the stakeholders. It is important that it is seen to be representative, objective, knowledgeable, and impartial.

### **Prototypes and one-offs**

24. For one-offs, consider the product as being taken into service, so that no assessment or CE Mark or Declaration of Conformity is required, but unlike the situation where supply has not taken place, the responsibility for complying with the protection objectives would remain with the manufacturer.
25. Modular computers should not be considered as one-offs but as a number of product variants where a worst case is identified, and this is used as the apparatus for assessment. The Declaration of Conformity would cover this and sub-equipped variants.

### **Building cabling**

26. Clearer guidance on system integrators' responsibilities, from an official source, is required.

### **CE Marking of products which are not relevant apparatus**

27. There should be a clear decision, promulgated throughout the EEA, that products outside the scope of any directive requiring a CE Mark should not carry it. A suitable way for this to be done is by amendment to the CE Marking Directive.
28. Customers should be encouraged to seek CE Marks only when relevant, and to demand supporting evidence in the form of a Declaration of Conformity and test reports.

### **Test methods for modules and components performing a direct function**

29. The approach taken by the FCC in the USA should be considered for guidance within the EEA.

### **Routes to compliance**

30. Some additional guidance on requirements for TCFs should be produced. This should include the possible use of information available on products already in service without problems.

### **Enforcement**

31. Clarity on the responsibilities of Trading Standards and the Health & Safety Executive on the enforcement of EMC issues in the workplace is required.
32. The definition of "supply" should be examined in the UK Regulations, since it may prohibit Trading Standards Officers from suspending supply in the UK of a product first placed on the market in another EEA Member State.
33. The DTI should involve the enforcement bodies in the negotiations of any changes to the Directive or the UK Regulations, and in the Administrative Co-operation meetings.
34. Trading Standards representatives should be invited to participate in the BSI EMC Committees.
35. Clarification of the roles of the CAA, the Radiocommunications Agency, and Trading Standards should be made in respect of EMC requirements on commercial aircraft of all types.
36. The roles of Trading Standards and the Health & Safety Executive in respect of industrial products should be clarified.
37. The position with respect to direct imports should be clarified.
38. Trading Standards Officers should be provided with additional training on the technical aspects of EMC, and a way should be found to reduce the burden of the costs of enforcement. Block booking of laboratory time by several authorities could result in savings.
39. Trading Standards Authorities should be provided with copies of the Commission Guidelines when they are published.

## 3. Findings

### 3.1 The immunity requirements of the directive

Are some products required to meet immunity specifications when there may be technical justification to show that this is not necessary?

The larger manufacturers, with very few exceptions, believe that there should be a defined immunity performance for most apparatus. These should be listed in the Commission Guidelines, together with the rationale. The only examples suggested for complete exemption from immunity were simple toys.

The Directive makes a complete provision for the EMC performance of apparatus within its scope. If immunity requirements were to be removed from certain classes of product, the legislation must be framed so that national provisions cannot be introduced, else the free movement of goods throughout the EEA may be affected.

Where a product's construction means that testing is not required, the exemption is best made in the product standard. EN 55104 has been described as a good example of how standards can cover the issue. This document states that products which are unlikely to be affected by electromagnetic disturbances are deemed to comply with the requirements without testing. In addition, it is felt that the ability of manufacturers to define their own failure criteria is a good thing.

Generic immunity standards allow manufacturers the option not to test to a particular phenomenon if it is not considered appropriate. Although not all manufacturers may have the necessary expertise to make judgements, products deemed to comply with the standard are still required to comply with the protection objectives of the Directive, which could be invoked if there is a problem.

Some companies felt that immunity requirements should not be across the whole frequency band, as this causes unwarranted extra expense. There is a counter argument which suggests that this practice could inhibit spectrum planning and usage in the future.

Judgement on immunity issues is made more difficult by the lack of a feedback system for reporting problems.

The Radiocommunications Agency (RA) suggested that EN 55020 should not apply to small simple products, and have decided that low power devices less than 10 mW on shared frequencies should have no formal immunity requirement unless there are safety or security implications. Such products therefore come under the normal EMC requirements with self certification.

Enforcement bodies consider that all equipment should have defined requirements for immunity. The Regulations provide for an acceptable degradation of performance, so that total immunity is not required. However the product still has to be fit for purpose and be acceptable to a user in its intended environment, or else, at the very least, a Trade Descriptions Act offence will be created.

### 3.2 Repeatability of EMC testing in meeting the requirements of the Directive

Is there a problem? If so, are particular sectors affected more than others? Can the CISPR "80/80 Rule" be improved upon?

The UKAS "round robin" tests measure only the uncertainty inherent in the measuring facility. The uncertainty budget quoted by UKAS shows no budget elements for maximising emissions from the variation of equipment under test (EUT) configuration, measurement azimuth, or mode of operation of the EUT, and considers only radiated emissions. Conducted emission is not examined, nor are the uncertainties associated with immunity.

Further uncertainties are introduced by the use of test facilities which do not meet the requirements of the standards, or by alternative test methods. This can take measurement uncertainty to at least an order of magnitude greater, and can produce inherently different results.

Emission measurements can differ by as little as  $\pm 2$  dB to as much as  $\pm 10$  dB. One common theme in the views of the laboratories is the ambiguity in the limits of EN 50081-1 and EN 55022 where different distances are used for Class A limits. Also there are different rules in EN 55011 and EN 55022 for extrapolation of results to different distances.

There is a concern by laboratories that there are too many standards and not sufficient consistency between them. They call for simplification, for example by replacing Class A and B with one limit. It is felt that the choice of limits is not an exact science, and together with the high uncertainties of measurement, it is questioned whether it is necessary to be so particular about having a variety of limits and environment descriptions. As currently written, standards do not themselves offer any incentive to a laboratory to reduce uncertainties.

The NPL survey shows that test houses differ in how they apply the standards. Some make it as easy as possible for a customer's product to pass. Others apply the most stringent tests and take the worst case results. It is not surprising, therefore, that manufacturers find that it is possible for a product to pass in one laboratory yet fail in another. Their perception of the causes is identical to those of the laboratories: test site, cables, test configurations, modes of operation, interpretations by test houses, and the skill and diligence of the engineer.

Large companies select test houses on the basis of its competence, and there are some that they "would not touch with a bargepole". Some were described as "lax" in that they were not concerned whether the equipment was actually powered up correctly before testing. Some laboratories ask about potential failure modes (on immunity tests) and some do not. Better repeatability was considered possible, provided manufacturers worked hard at producing appropriate test plans. The manufacturer must attend the testing; how well the tests are performed is largely in his hands.

The CISPR "80/80" Rule is designed to take into account production variations, rather than measurement uncertainty as is sometimes assumed. It appears that many manufacturers take it as an implicit relaxation of the limit, and will market a product which tests close to a limit on the grounds that not all products need to comply. Several laboratories have also shown a misunderstanding of the rule. In practice, although it appears to be a significant relaxation (in that no limit is specified for the 20% allowed to exceed the specification limit) if there were to be a wide variation in product EMC performance, this would imply that some would have to have a wide margin of compliance.

The Rule was developed for voluntary standards, and its translation into a regulatory environment does not sit easily with the concept that all products placed on the market shall comply with the protection objectives.

Industry considers the 80/80 Rule to be very important, as it allows for production variations. It believes that it protects the manufacturer from having his product removed from the market as a result of tests on one sample. However, the enforcement view is that whilst statistical sampling may be necessary in a prosecution based on a competitor's complaint, it would be less necessary where a case of interference is involved. It is also a lower level of confidence than they would normally expect; the Rule is open to a lot of abuse, as the EMC Directive applies to every product. Whilst the status of this clause is unclear, it is probable that the defence in any court case would raise the issue.

The laboratories' perception is that it is rarely used. They would like to test more than one sample, but in practice, manufacturers only submit one sample for testing.

The description of the Rule varies from standard to standard. A detailed section on the rule could be deleted from product family standards and instead a reference made to a dedicated document which properly explains the purpose of the rule and the method of its application.

A problem in eliminating the 80/80 Rule is that it would have the effect of tightening the requirements, since the mean performance would have to be better to ensure that all products fell within the limits. It is possible that a relaxation in the limits could accompany a tightening or removal of the rule, but it may be impossible to secure agreement across several product committees in both European and international fora. For these reasons, it appears the Rule will continue.

### **3.3 Is the *Minimising the cost of compliance* advice valid?**

Is the DTI's advice to SMEs justified?

The market penetration of this document has been poor. It does not appear to have been circulated as widely as the other DTI guidance in the *Business in Europe, Product Standards* series. This is shown by the survey of small manufacturers and the fact that around 20% of Trading Standards Authorities do not recognise it. The impact of the guidance has therefore been limited.

Whilst opinions have been mixed on the document, it is generally considered that the guidance is valid and helpful, and is consistent with the statement in the generic standards that if the manufacturer did not believe a test was appropriate, it was not necessary to test.

Industry felt that the document gives small manufacturers the opportunity to comply, without which they would probably do nothing, and take a chance on not being caught. Machines have been taken off the market because it was too expensive to bring them into compliance, and demand was being met by the second-hand market. Manufacturing was also moving out of the EU because of the increasing number of regulations. However some of the larger manufacturers perceive it as a relaxation which could give smaller manufacturers a commercial advantage, by being interpreted as a licence to do nothing; the law should not be applied differently to small manufacturers.

Enforcement authorities felt that the advice was useful and appropriate, but echo the concern of a possible "get out clause", and consider that a reminder of Regulation 88 would be helpful. Previous supply of products into a given environment without problems should provide a good basis for compliance. Where a manufacturer is confident of his sources little or no testing may be required, but he must then be skilled in EMC matters to ensure correct assembly of his equipment. This is not always the case. They felt that there should also be a clear statement of where the responsibility lies if there is a complaint.

Additional emphasis on due diligence should allay these fears without significantly increasing the burden on small manufacturers.

The guidance could also include advice for those procuring, and those installing, products (possibly in different documents).

### **3.4 Use of apparatus in certain environments**

Can the environments be dealt with more clearly in the Directive? Are they understood? Can they be relaxed for certain requirements for certain products?

Both the concept and definitions of EMC environments causes problems, and although larger manufacturers show a greater degree of understanding than smaller, improvements should be made. Inconsistencies in approach between standards mean that products intended for the same location could be subject to different requirements in terms of the limits (for emissions) and severity of the tests applied (for immunity). This must confuse any manufacturer producing a variety of products, although some manufacturers did not feel this was an issue, as they could ask a laboratory to test to "appropriate" harmonised standards. This view is only valid for apparatus with clearly defined product standards.

The problem arises when different standards committees group locations into different categories. As an example, a product destined for a light industrial location must meet Class A limits of EN 55022 if designated Information Technology Equipment (ITE) but must meet Class B limits of EN 55022 if not so designated, and therefore covered by EN 50081-1.

There is a widespread demand that the domestic environment should be excluded from the commercial and light industrial environment, because it penalises manufacturers of products in the commercial and light industrial sectors which use the generic standards for emissions. This would require the creation of two new generic standards, but could allow the emission limits of the commercial and light industrial generic to be aligned with some product family standards.

The generic standards list a number of examples for each set of environments, but add caveats in the emission standards that the limits may not provide full protection against interference to radio and TV receptions in certain circumstances. EN 55011 and EN 55014 contain similar clauses and suggest that special mitigation measures may be necessary. Furthermore, EN 55022 apparently allows the use of Class A products in the domestic environment providing a warning label is affixed stating the user may need to take additional measures to prevent interference. It is not clear that this is acceptable under the legislation.

Several new standards do not include a description for the environment, and so the standard must be assumed to be sufficient to cover the performance of the product in any typical usage. The standard for professional audio, video, audio-visual and entertainment lighting control apparatus contains five environments, none of which align precisely with other standards. The pre-standards for the railway environment define environments unique to those locations. The European Telecommunications Standards Institute (ETSI) defines four environments for telecommunications equipment in a manner different from the CENELEC standards.

The standard for professional audio, video, audio-visual and entertainment lighting control apparatus and the ETSI standard ETS 300 386-1 stand out as examples of thorough treatments of the issue of environments. In particular the reader is informed of the rationale for the choice of limits relating to different environments. The same principles could be applied in developing limits for other standards.

The Electricity Association felt that there were different environments at different supply voltages. This view is opposed by the Health & Safety Executive (HSE) who consider that the intrinsic assumption that a heavy industrial environment is the most onerous can also be false. Such premises are often more benign in terms of transients because of the low impedance supply from local transformers. They do not believe the descriptions of the environments in the generic standards to be appropriate or sufficient, because they are related to the type of electricity supply, which is not relevant to mobile machinery or battery powered products.

For both emission and immunity, equipment in the same location should be subject to the same test severities. The problem is getting the various committees to agree since each seems determined to define a unique range of environments for their products, and they jealously guard their autonomy.

### **3.5 Should all sectors be within the scope?**

Can certain industrial sectors be removed from the scope of the Directive, instead being covered by a vertical directive?

There was a strong preference for a comprehensive horizontal directive; no new vertical directives containing EMC provisions were required. Indeed there was general agreement that in the cases where such directives exist, there are both problems defining the boundaries, and inconsistencies of approach. Multiple directives can also lead to inconsistencies in standards, for example the medical devices standard, where the differences between EN 60601-1-2 and the generic EMC standards have been described as a “gross mismatch”.

A minority of manufacturers expressed no preference, providing it is made clear how to comply, it is not too costly, and information is readily available.

A horizontal committee of the Commission is examining the interpretation to clarify the EMC requirements of the Machinery Directive. At present the EMC requirements cover only those related to safety, and do not include ESD or transients on signal cables

Trading Standards cannot enforce EMC on aircraft, even though they are within the scope and they therefore have a duty to enforce. Trading Standards and the Civil Aviation Authority agree that it is a CAA responsibility.

The RA comment that quartz watches have been exempted, and there is a suggestion that calculators should also be exempted. The problem with this is where is the line drawn? They feel that the Type Examination requirements after the Type Approval exercise is unnecessary, does not add any value, and should be removed for transmitters. Immunity would be treated as for non-radio products. In the short term it may be easier to remove low power products as this is arguable on power limits. In the UK regulations, for devices which use a magnetic field rather than an electromagnetic field for transmission, no Type Examination is required, but this is still a requirement in the rest of Europe.

### **3.6 EMC Standards**

Are the EMC standards produced by CENELEC and ETSI too broad in their application/phenomena covered/too prescriptive on test methods, etc.? Is there adequate "supervision" of the standards-making process to ensure that the standards are not too stringent? Is the constitution of the standards committees fair?

There is a widespread feeling that the composition of standards committees, particularly at international level, is unbalanced and dominated by utilities and large manufacturers, and others with a vested interest such as test equipment suppliers. This can result in some requirements being forced through on commercial or political grounds. Small manufacturers, users, and (in the UK) enforcement agencies are rarely represented. There seems to be little that can be done to offset this unless funding is made available for smaller organisations and customers to participate. Not all stages in the standards production process are available as drafts for public comment from BSI.

Particularly at international level, the composition of the committees and working groups is a self-perpetuating status quo which is very difficult to change. If the timescales were shorter, industry would be more likely to contribute, since less resource would be required. Although ETSI has a more direct input from its members, this cannot guarantee equitable representation. Since only member companies are allowed to vote on the standards, in effect companies have to pay to vote. In general it is only the larger companies who are members of ETSI.

There is widespread concern over the proliferation of new tests and the lack of control over their introduction. There is no cost/benefit analysis before a new test procedure is adopted, and no formal means to identify that a standard is too onerous. The majority of the basic standards are produced in the international domain where standards are voluntary. It is difficult to prevent the production of such standards on the grounds of economic penalty at that stage. New phenomena should not be standardised unless there is a thoroughly-proven need, with statistics showing where problems exist.

The decision-making should be based on sound technical evidence rather than opinions. There is insufficient practical experience of tests before they are published. One problem in gaining experience with draft tests is the cost of testing, both in time and availability of products to test. Many manufacturers are reluctant to test products against a draft standard.

When a basic standard is published as an EN, it becomes available to be included in future editions of the generic standards. These become the benchmark for future product standards. It is at this stage that effort must be placed. The feeling in the UK is that many national committees in other member states are dominated by major utilities who are happy to see the imposition of extra requirements in industry. Majority voting means that the views of the UK do not always prevail.

Ultimately the problem lies with CENELEC and the Commission. CENELEC has a mandate from the Commission, and can only produce standards within that mandate. However, they receive income on the basis of the number of standards produced. This is justified by the Commission on the grounds that the standards are voluntary (because there is an alternative route to compliance available). This is not the case for radio transmitters and transceivers. The Commission has the ultimate power to decide on the applicability of a particular standard; the final sanction is to withhold listing in the *Official Journal*.

The *Think Tank* could have some role, but it is not elected, and arguably not representative of the stakeholders.

There is a strong plea from some quarters for stability; experience should be gained with the current regime of standards for maybe five years before any further changes or additions are contemplated. An opposing view is that standards take too long to reflect new product developments; even though such products are covered in the scope of the standard, the appropriate test methods are not.

There is also concern about transition periods. Some parts of industry would like these to be not less than 5 years. Costs can also be incurred when a new product family standard is published which takes precedence over a generic standard, particularly for old products which would not otherwise be changed.

### **3.7 Status of the latest guidance from the Commission**

The draft Guidelines were received favourably by those manufacturers who had seen them. They considered them to be more helpful than previous editions, and they were keen to see them published. There was some concern over their status, as they are not in full agreement with the Directive or the UK Regulations. For this reason, test houses and enforcement bodies were expressing concern; guidelines should not introduce new concepts which are not in the Directive itself nor in the standards. An amending directive may be a better approach.

### **3.8 One-offs**

How should one-offs be handled under the Directive?

It is not clear how the low volume products and one-offs should be handled equitably. On the one hand, their ability individually to create problems is reduced by their low numbers, but on the other they are more likely to be used in industry where safety becomes a more critical factor, and where other regulations apply in addition.

There is some concern at the issue of personal computers being assembled from modular parts being considered as one-offs, since they are numerous, and although built to order, are based on a limited range of modules. A common recommendation is to build one-off products from CE marked parts, but experience has shown that this does not necessarily produce a compliant product. Recent changes in the USA, to allow computer assemblers to declare their products compliant when assembled with certified modules has not been widely adopted due to the difficulty of certifying the modules.

Enforcement authorities are strongly opposed to the introduction of an FCC style modular computer regime in Europe, because there is no certification process for modules, and it does not take into account the assembly technique. However, they recognise a distinction between a machine built from sub-assemblies with a proven EMC performance and assembled in accordance with instructions and good engineering practice, and a product built from scratch about which nothing is known. They believe that the assembler should endeavour to gain as much information as possible about the sub-assemblies to be used. Installation and assembly training in EMC is considered essential so that builders and installers can limit any problems. Simple testing should be initiated and their environments monitored for interference. Files and records of all actions should be maintained.

A number of suggestions have been made to allow the use of one-off products under the *taken into service* requirements, particularly as they are often designed jointly with the end user, but this ignores the responsibility of the manufacturer, and the lack of a CE Mark would cause problems if the product were to cross the borders between Member States. The approach could cause difficulty in apportioning responsibility in cases of dispute. The responsibility for complying with the protection objectives should therefore remain with the manufacturer.

For PC manufacturers, there were differing views. As the volume of business goes up, the onus on them increases and they should carry out some evaluations on fully-equipped PCs with the fastest mother boards in several combinations. Alternatively, a simple TCF was suggested, based on some simple tests.

There was a suggestion that most people are effectively ignoring the legislation for such products, or assembling from CE Marked components and waiting for someone to challenge them.

### **3.9 Infill, extensions and upgrades**

Many large systems are designed to cater for growth during their installation lifetime. As a consequence, they are supplied sub-equipped to allow for future expansion which may be provided by hardware and/or software changes.

Opinions were mixed. Some manufacturers, familiar with upgrades to existing systems, believe that the matter is resolved and the principles well known in other sectors. However one felt that the enforcement position on this issue should be clearly defined so that all companies know where they stand.

EMC knowledge is required to judge the impact of changes. A view was expressed that as this is a trade directive, it should not be concerned with upgrades. There is safety cover from PUWER, and problems would be fixed by the supplier.

Problems may still persist where a product is bought in, upgraded and resold. Here the product is equivalent to new. A large part of a small computer assembler's business is upgrading customers' old machines. If the shop takes an old machine in part exchange, and upgrades it before reselling, they have the same (or possibly greater) problem as if they were assembling a new product.

Enforcement bodies believe that a certain level of additional equipment should be allowed before a new system is considered to have been created. If additional parts are at least as compliant as the existing system they consider that they should be permitted. However a significant upgrade could amount to refurbishment or re-manufacture, and formal compliance and technical file details will be needed. They are concerned that some industries propose high levels of upgrading without the need to be compliant.

### **3.10 Building cabling**

Problems can arise if equipment has a higher level of emissions or bit rate than the wiring can support.

Many respondents recognised that this could be an issue, since although cabling is excluded from the scope of the Directive, it acts as an antenna to equipment connected to it. Older cabling installations may not be suitable for the higher bit rates of the wanted signal, or the higher frequencies of the spurious emissions of more modern ITE. The issue seems mainly to be concerned with data cables. For other types of cabling, manufacturers feel there is less of a problem.

The widely held view was that the system is the responsibility of the system integrator. If the system is subsequently altered by the user then there is shared responsibility. Suppliers of the ITE could assist in ensuring that their products were tested for EMC with typical network cards and cabling, and that cable suppliers could define the performance of their cable in EMC terms as well as functionality. However, a document prepared by the BSI committee responsible for structured cabling, suggests that the ultimate responsibility rests with the *owner* of the IT network, even if he is not the system integrator. This is inequitable if he has placed a turnkey contract with a system integrator who has supplied the complete system.

One trade association attempts to provide guidance to members in the absence of manufacturers' instructions, but believes that the manufacturers should provide better information and support to the installer. If the client has a problem, as the interface the installer usually gets the blame, and has to prove that it isn't his fault, even though he is only installing the products he is required to. This burden of proof can prove costly, and this is leading to an increasing use of EMC site surveys, thus increasing costs.

Enforcement bodies are aware that this is a problem. A number of Trading Standards Authorities apparently consider that cabling should have to comply with the Directive.

### **3.11 CE Marking of products which are not relevant apparatus**

There has been widespread confusion over the distinction between components, sub-assemblies and relevant apparatus.

There is a widely held view that this is a problem area. Partly this has been caused by definitions being unclear as to what is relevant apparatus, especially for the complex components intended for industrial incorporation by professional assemblers. There are significant commercial pressures for suppliers of sub-assemblies to provide their products with a CE mark, even though these are for OEMs and may be outside the scope of the directive. This is leading to CE Marks appearing on products which do not require them. Component manufacturers consider it is unreasonable for OEMs to force them to do this.

Some manufacturers who responded ask for a defined EMC performance for their sub-assemblies, but consider the CE Mark *per se* to be worthless on these items.

Germany requires the CE Mark for benign apparatus, yet it is illegal in the UK. For modules, the RA see no problem provided the module is accompanied with instructions for use which set out precisely that the product conforms when used with specified hosts assembled in a specific way. It would be tested as part of the finished product. The RA currently allows Type Approval of modules, so it would be inconsistent not to allow CE marking.

Enforcement bodies have not sought to penalise erroneously CE marked components. They consider compliance with CE marking would always be considered secondary to compliance with the essential requirements of the Directive. Prosecutions are taken on the basis of safety rather than misleading markings.

### **3.12 Test methods for modules and components performing a direct function**

Where such items fall within the scope of the Directive the manufacturer currently has no standard to follow for testing.

The general consensus in the UK is that the module should be tested in a compliant host, supported by documenting the rationale for due diligence, but this can cause difficulties if the final use is not known, or a host is unavailable (or too large). The case of a sub-assembly only placed on the market and not embodied in manufacture is more difficult. The only practicable course of action seems to be to test in a representative parent product and support the test with a technical appraisal of the EMC characteristics of the product.

Laboratories are finding increasing interest in the testing of sub-assemblies, for example mother boards for PCs. This may be an attempt by the manufacturers of such products to protect market share, because a small assembler will feel that by using compliant parts, he has satisfied due diligence without further testing.

Difficulties are foreseen in this area, since the definition of the intended environment becomes much more difficult. Changes made at the next stage of manufacture can also negate any conformity, for example a hole drilled in a case which is providing shielding, and cables passed through without filtering. An attempt to produce standards for assessment could lead to a proliferation of standards since it is unlikely that a type of generic would be sufficient. There is a standard for programmable logic controllers and there is an emphasis on EMC in EN 61496 for electrosensitive protective equipment, so it is possible that the development of such test methods could be market-driven.

Some Trading Standards Officers are recommending assemblers to state on the purchase orders that “all goods must comply with Directive 89/336/EEC”. It is difficult to see how a supplier of exempted items could comply with this.

The FCC has recently issued a procedure for assessment of parts of PCs which involves testing together with typical modules, to form a complete computer. This is then assessed for emissions. The Head of the Equipment Certification Branch at the FCC Office of Engineering and Technology says that there had been little take-up so far, apparently because the test method was too onerous.

### **3.13 Categories of apparatus**

Do manufacturers understand classifications of products in identifying relevant harmonised standards? Could more than one standard apply for each EMC phenomenon?

Industry finds few problems where products have a single function and fall within the scope of a single product family standard, but the increasing convergence of products in some categories is causing difficulty in identifying the most appropriate product family and hence the correct harmonised standards. Examples include combined computer/televisions, personal digital assistants (computers) with built-in mobile phones, and Internet devices which connect to the phone line and TV.

There are two suggestions from those responding. The first is to take the worst case from any of the standards which may be applicable; the second, to apply the generic standards.

It was noted that this could be a problem for systems assembled from parts with different functionality, and therefore covered by different standards, yet requiring system-level certification. In such cases, intra-system compatibility was also important, but covered only by fitness for purpose legislation.

This can be a grey area not just for the manufacturers but also for the standards makers. For open access network multimedia, IEC TC 100 (multimedia) are addressing the issue, and it is becoming clear that the partitioning of many standards will have to disappear in future. The convergence of PCs and TVs is being considered in CENELEC TC 210.

### **3.14 Routes to compliance**

Do manufacturers understand the advantages and disadvantages of the alternative routes to compliance? Do they follow the most cost-effective route for each of their products?

The TCF route is widely believed to be a high cost option, although Competent Bodies point out that this is not necessarily the case, and for product variants it can be a cheaper option than multiple testing. It is generally felt that manufacturers will not understand the advantages and disadvantages until they have sought advice. The “mystery shopper” survey has shown that Competent Bodies are more likely to recommend the TCF route than others.

The most appropriate route is not always apparent, and many manufacturers need to take advice. The press has not helped in the creation of awareness, rather it has created a level of fear. Some also believe that the TCFs demanded by the Competent Bodies are too large, and that the guidance on their content should be simplified.

The larger manufacturers have less difficulty in assessing the advantages and disadvantages of each route, although some feel that the DTI guidelines force the use of the TCF for product variants.

The Association of Competent Bodies considers the TCF to be the most misunderstood part of the Directive. It would like to inform manufacturers how the TCF may be the best route to compliance for them, and is considering the production of a guidance booklet. However one Competent Body said that experience has shown that the TCF route is generally not advisable for small manufacturers.

### **3.15 General comments**

There was a strong plea for stability from some large manufacturers and trade associations. If changes are to be made they should make the requirements simpler and more straightforward to meet.

The RA differs from Trading Standards in their opinion about direct imports by the end user. The RA’s solicitors believe that a product is “supplied” if it is shipped to the EEA. If the end user collects the product himself from overseas then no supply into the EEA takes place and the end user is responsible for taking into service. This begs the question that if in the first example “supply” has taken place, who is the responsible person in the EEA?

## 4. Market survey of providers of consultancy, testing, and advice

The purpose of this part of the survey was to build up a picture of the difficulties that companies face when using the organisations established to help in complying with the Directive.

### 4.1 Competent Bodies, Test Houses, and Consultants

Generally most organisations offered some advice over the phone. The average call duration was 10.5 minutes, with a range from 2 to 21 minutes.

One company tested only cable, one supplied test equipment but did not test, one consultant said that he was too far away to help. Three companies asked for faxes outlining the product so that they could offer a quotation for testing (and offered no information immediately). One company stated that they would not provide free information and we should approach the DTI if that is what we wanted.

Many of the companies surveyed did not listen closely to the information provided about the products. The control panel was described as intended for use in a laboratory. Many companies equated control panels with a heavy industrial environment, and offered advice accordingly. Similarly, few companies noted the safety implications of an incorrect reading being produced by the ESD wrist strap tester.

The most striking feature of the findings of the survey was the variety of advice offered. A manufacturer speaking to several of these companies could become confused about his responsibilities and the best routes to comply. Conversely, by ringing enough companies, he may well be able to find justification for following a route he was already intending to follow.

The cost of compliance (not taking into account in-house time) also varied widely. By following one laboratory's advice, the cost would be zero. The most expensive alternative was £6500, plus ongoing costs for maintaining a TCF. There was a wide variety of advice on the most appropriate means of declaring compliance for simple products.

In general, Competent Bodies tended to recommend the TCF route more than other organisations, and laboratories similarly recommend testing. This is not invariable, however, as the organisation recommending self-certification without any testing was a laboratory and a Competent Body.

### 4.2 The DTI

There is a widespread view that the DTI Awareness Campaign has made the electronics companies conversant with the requirements, but that these companies probably needed the least help. The assemblers of machinery in particular, did not receive the same information and many remain largely ignorant of the regulatory and technical requirements.

A view was also expressed that the DTI has not "grasped the nettle to make definitive statements" which has allowed "test houses to provide misinformation to their own advantage". Concern was expressed over test houses generating an atmosphere of fear.

A comment was made that "approaching the DTI is like banging one's head against a brick wall". Even the *DTI Business in Europe Hotline* would not identify the source of advice.

The majority of respondents from SMEs found the blue DTI guidance booklets to be helpful, but some found it too general. One manufacturer commented "The DTI did a very good awareness campaign. For anyone not to know about this, they would have needed to go around with their eyes closed". There were, however some negative remarks that it was unclear, not specific, and "typical Government information".

## 5. Enforcement Bodies

### 5.1 Trading Standards

These Regulations have taken Trading Standards Authorities into many sectors of industry and technologies previously unknown to them. Although many Trading Standards Officers (TSOs) are technically minded they are primarily interpreters of the law, and the technical basis of the regulations is not always easily understood. Because of the breadth of the regulations enforced by TSOs, learning is often needs driven. It is felt that at the moment, Trading Standards Officers are at the bottom of the learning curve with these regulations.

Sufficient finance and training is currently lacking. The Regulations have imposed a significant burden on local authorities, particularly with regard to giving advice and checking for compliance. The recent changes in local authorities has also increased the problem. As new authorities are created, the number of people required to become proficient in the regulations has increased. At the same time, there are now fewer people in many Trading Standards departments, and so each officer will be required to enforce a wider range of regulations than previously.

Trading Standards believe that the EMC Clubs have been helpful to businesses and TSOs by providing advice, training, and testing at lower costs than independent consultants and laboratories. They recommend that these should continue and develop further into associated areas such as the Low Voltage and Machinery Directives.

Enforcement problems are caused by the definition of “supply” in the Regulations. This is defined as “first making available of relevant apparatus for a consumer in the Community”. Unless this definition is changed, it is possible that Trading Standards Officers will have no powers to control apparatus of non-UK origin, since this could mean that they could have no powers to suspend products at distributors.

There are a number of other areas identified by Trading Standards as causing difficulties in enforcement of the Regulations. These include: the definition of excluded installation; clarification of use in an EMC controlled environment; the meaning of taking into service; the application of the Regulations as they refer to repaired or refurbished apparatus; the impact of the Automotive EMC Directive during the transition period; limitation of powers and enforcement to the area of appointment; clarification of the term “equipment”; application of controls to components; different interpretations by government departments responsible for Medical Devices and EMC, where the lawyers have differing views.

Trading Standards consider that the HSE should be involved in cases of EMC insofar as it affects workplace safety. They also require powers over domestic premises. The lack of clarity over these powers means that they are unlikely to enforce the Directive in the case of products in use in industrial or domestic premises.

The vast majority of individual authorities said that they are reacting to complaints and requests for information. The main reasons given for the reactive approach are a lack of appropriate industries locally, and a lack of budget or resources.

Some authorities are becoming proactive. At the other extreme, another authority answered: “To carry out enforcement, we would need to find a company blatantly doing nothing, and a safety-related problem.”

There have been very few complaints. Those that have been received have mostly been from competitors. Questions have largely been to clarify interpretation of the requirements, and are becoming more specific.

About half the authorities have not experienced problems in dealing with the legislation. Of the rest, there was no particular theme, although three authorities expressed concern about the cost of testing acting as a barrier to enforcement.

One authority had specific problems related to the offshore industry, and felt that there should have been better liaison between the DTI and the Health & Safety Executive. Although the EMC Regulations are restricted to territorial waters, equipment on oil rigs is covered by PUWER, which is the responsibility of the Health & Safety Executive. The HSE did not provide much information to manufacturers. Problems were caused when the DTI declared that the EMC Regulations did apply to oil rigs.

Only half of those asked offered suggestions for improvement. These include: a desire to see the law as specific as possible, but countered by another view that the Regulations should be made slimmer and less complicated; product-specific guidance would also be helpful e.g. on PCs where many people have become manufacturers - statements like “the courts will decide” are unhelpful; businessmen feel that the application of criminal law is not appropriate to this type of phenomenon - a change to administrative law as in some other Member States might be better; feedback on the enforcement across Europe would be useful.

## **5.2 Health & Safety Executive**

The Health & Safety Executive (HSE) has no direct powers of enforcement under the EMC Regulations, since the scope and purpose of the EMC Directive go far beyond safety. They can, however, become involved because EMC can be a factor in the overall arrangements for safety of equipment, and EMC is always taken into account when problems are investigated. Section 6 of the Health and Safety at Work etc. Act 1974 (HSWA) refers to the manufacture and supply of products, and they also have powers under the Provision and Use of Work Equipment Regulations (PUWER).

No HSE Inspector would attempt to prosecute under the EMC Regulations, but would probably discuss the issues with the appropriate Trading Standards office, and decide the most appropriate legislation to be applied. If this were the EMC Regulations, then Trading Standards would act, otherwise the HSE could act under the above legislation, or possibly the Supply of Machinery (Safety) Regulations.

The application of the legislation is different. The EMC legislation relates largely to the supply of equipment (although there are some duties on taking into service) whereas PUWER places duties on anyone who provides equipment for the workplace such as an employer. This means that those purchasing equipment for such use have to be satisfied that it is safe, meets relevant European directives (including 89/336/EEC) and is used only under conditions for which it is suitable. An HSE Inspector could be expected to check an employer’s procedures for this (such as whether they have requested copies of Declarations of Conformity) but would be unlikely to check for CE marks specifically for EMC.

The HSE Directorate of Science and Technology provides support to field HSE Inspectors on technical matters. These inspectors are thus aware of EMC issues, but have not seen many problems to date which could be attributed to EMC shortcomings.

The HSE believes that the Generic Standards may not be adequate to ensure safety. They believe also that Product Standards should include all requirements for that product including safety, as it is difficult for a manufacturer to search for all possible relevant standards.

## **5.3 The Civil Aviation Authority**

Custom and practice in the aircraft industry is different to other sectors. Aircraft manufacturers dominate the process because the aircraft as a whole is certified as airworthy. The industry is described as “desperate to escape EU legislation because of its territorial nature”.

The rigour of the EMC assessment is not an issue, but CE Marks are not applied even though they are required by the regulations. It is felt that this is a “head in the sand” attitude, but any manufacturers objecting risk being put out of business.

Most equipment is manufactured in the USA, and generally supplied installed in the aircraft. Certification requirements cannot be imposed retrospectively, and the CAA is compelled to accept. For equipment fitted later there is a stronger argument for accepting the role of the EU and ETSI. Unfortunately acceptance of the EMC Directive for modules seems some way away. Ideally a manufacturer should only be required to

comply with an ETSI standard, but the current process requires a Technical Basis for Regulation for certification, which does not yet exist. Should such a route be available, then a Mutual Recognition Agreement could be set up with the USA.

The aviation industry has tried to claim that 3922/91 exempts them from the EMC Directive, but it is the CAA's view that whilst the former is more specific, the Directive still applies. Furthermore, 3922/91 has not been implemented. Non-radio products are also clearly within the scope of the Directive.

The industry argues that because the market is small there is not a significant impact on the free movement of goods, but the CAA would very much wish to see a move away from *de facto* standards, to an open regime.

The CAA have also identified problems in the split of responsibilities between the Radiocommunications Agency and the CAA. The CAA does not have the engineering resources, because it does not receive the income from licence fees, and therefore cannot function as an enforcement body. If there are problems, they are resolved by informal discussion.

The CAA proposes that a full implementation of 3922/91 would require the use of a Notified Body, and would also invoke the EMC Directive. It would therefore make no difference that a separate regulation had been created. The CE Mark would still be required. There should be no exceptions for aviation use when exemptions are not granted even for the simplest of radios.

## **6. Special needs**

### **6.1 Additional help available for Small and Medium Enterprises**

The Health & Safety Executive takes a great interest in the needs of SMEs and try to involve them as much as possible. This is done from the highest level via business breakfasts and similar initiatives.

BSI has set up a policy committee for small businesses, but this is only a pilot project at this stage, and is only dealing with the construction industry. It may take some time before the needs of the electrical industry can be addressed.

Trading Standards Officers have taken a special interest in the needs of small businesses and a number of areas have made a special effort to provide advice to small firms in their area.

### **6.2 Survey of SMEs**

Responses from the 44 companies are reported below. Three companies claimed their products were outside the scope (although they are clearly within, even allowing for the new guidelines) and did not need, therefore, to comply. Two companies admitted that although they were some way to demonstrating compliance, their products were not yet compliant.

The majority of those questioned first became aware of the legislation during 1994 or 1995. Three companies did not become aware until 1996. The major sources of information have been the trade press and magazines, together with the DTI information packs. Other sources included trade associations, customers and suppliers, seminars, laboratories and consultants. Only one company used the Internet.

Just over 65% of companies had seen the blue DTI guidance booklet. Only 5% had seen the *Minimising the cost...* leaflet, yet this is aimed at this type of company. None of those surveyed had seen any edition of the Commission Guidelines. Nearly one third had seen no official guidance at all.

Only 20% of companies had made use of their local EMC Club. The majority of the rest had not heard of their existence. Those who attended the Clubs generally found them useful, but there were some comments that the presentations demanded too much prior knowledge, and they were cliquey.

10% had sought information from their local Trading Standards Office. One company had received a visit without requesting one. The rest had made no contact. The main reason was a fear of enforcement action; several respondents commented that they did not wish to “put their heads above the parapet”. Another common reason was that enforcement authorities are not generally perceived to be suppliers of advice, or that the advice required was of a technical nature which TSOs were thought unable to answer. Those who had spoken to their local officer commented that they had found them to be very helpful.

Two thirds of the companies had declared compliance after some testing. The rest had not tested, the compliance for the majority being on the basis of assembling from CE Marked parts. UKAS accredited laboratories had been used by 37% of those who had tested their products. The remainder had used external non-UKAS, and external and internal pre-compliance tests in equal proportions. Reactions were mixed. Many found the laboratories, both UKAS and non-UKAS to have been helpful and knowledgeable, but some negative comments were made, particularly on cost, and inconsistencies between different laboratories on advice and test results.

Five percent had used the TCF route, and the remainder had self-certified.

Problems identified were:

- Finding information written in plain English, knowing where to start, determining which standard applies.
- Constantly changing standards, conflicting views, particularly on the interpretation of components, systems, and plug-in modules, which products are covered, and the requirements for records.
- The time and costs incurred in carrying out the assessment, the impact of the cost and development time of the product, extra paperwork, and dealing with day to day matters at the same time. “When competing in overseas markets, our competitiveness is damaged because we have to offer our UK product”.
- Changes to products requiring a re-assessment, identifying standards, finding the sources of failures.
- Management apathy; the Managing Director does not see the value of it - it is a cost not a benefit.
- Competitors have done nothing and are selling without the CE mark, which gives them an unfair advantage, there is not a level playing field. “Nothing will happen until there are prosecutions”.
- Lack of customer interest and demand. “It has been a good exercise for our company, but the customer has not benefited with a better product. It hasn’t increased our market share because customers couldn’t give a stuff!”
- Getting information from suppliers.

There is concern about being found non-compliant. One company commented: “One product recall would drive our company into liquidation”.

There were a large number of negative comments from the small businesses, including four letter expletives.

The main concern is the imposition of requirements which are perceived to have no value in improving the product but just add costs. The cost of laboratory time and of certifying TCFs is perceived to be too high. The effect is considered to be disproportionate on small companies. The customer does not see the benefit, and is not prepared to pay for it.

There is despair at the lack of enforcement action, and many competitors see this as a chance to gain a commercial advantage by doing nothing. A typical comment was : “There should be more enforcement. We would like to know where the Government stands.”

**Author :**

Brian Jones  
EMC Consultant  
89 Widney Road  
Knowle  
Solihull B93 9EA

Telephone & Fax: 01564 773319

E-mail: [emc@brianjones.co.uk](mailto:emc@brianjones.co.uk)

**Policy relating to the EMC Directive and UK Regulations :**

David Southerland  
Department of Trade and Industry  
Standards & Technical Regulations Directorate  
3.120 Red Zone  
151 Buckingham Palace Road  
London SW1W 9SS

Fax: 0171 215 1529